# Using 5-meter data from ARGC in ArcGIS and Autodesk Land Desktop

By Nathaniel Todea

5-meter DEMs are available from Utah Automated Geographic Reference Center (AGRC) http://gis.utah.gov/images/sgidraster/DEM\_5m\_areas.html. In the near future with the installation of ArcGIS 9.2, DEM data will be available and downloadable from ARGC web server. Unfortunately the DEMs are not the type of DEMs that are accessible in AutoCad. Below are procedures to bring DEM data into AutoCad using ArcMap ArcInfo. <u>Note: you will need to have the full version of ArcMap ArcInfo, not Toolkit ArcMap-ArcEditor for the below procedures to work properly</u>. If you have ArcMap 8.3 ArcEditor the procedures will not work. This user guide outlines several process for working with elevation data, which may not be needed depending on the project. Refer to the table of contents below.

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*Note: 5-meter DEMs does not substitute good sound engineering and the need for surveying.* Below is the information, tolerances and limitation of data.

Accuracy of Products:			
Product	Horizontal	Vertical	
2-meter DEM from 12.5 cm	NSSDA, radial RMSE of	2.13' RMSE	
HRO (6 inch)	2.2', 95% confidence 3.8'	NSSDA 95% 4.2'	
2-meter DEM from 25 cm	NSSDA, radial RMSE of	4.27' RMSE	
HRO (1 foot)	4.4', 95% confidence 7.6'	NSSDA 95% 8.4'	
5-meter DEM from 1-m	RMSE 3m, NSSDA 95% of	RMSE 4m, NSSDA 95% of	
NAIP	5.2m	9.8m	

D	atum / Coordinate Specification		
	Project Coordinate S	Specifications	
	Horizontal Datum	NAD 83	
	Vertical Datum	NAVD 88	
	Coordinate System	UTM Zone 12	
	Mapping Units	Meter	
	Geoid Model	Geoid03	

#### **DEFINITIONS AND ACRONYMS:**

Datum – Defines the size and shape of the earth, and the origin and orientation of the coordinate system used to map the earth.

DEM – Digital Elevation Model

Geoid – The earth has a highly irregular and constantly changing surface. Geoids are gravity models that are used to represent local variations in gravity that change the local definition of a level surface.

HRO – High Resolution Ortho-Photography (1-foot – 6-foot resolution)

NAVD - North American Vertical Datum

NSSDA - National Standard for Spatial Data Accuracy

- RMSE Root Mean Square Error
- UTM Universal Transverse Mercator

#### CONVERTING ASCII FILE TO DEM FOR AUTODESK:

After downloading data from ARGC open ArcMap-ArcInfo. <u>*HINT*</u>: when saving data do not save data on your desktop. ArcGIS does not like to work with Raster data when the file hierarchy has spaces (C:\dem (good); c:\my project is here (bad))

Make sure that in the top left blue portion of the screen reads:

🔇 Untitled - ArcMap - ArcInfo

#### Activate Spatial Analyst and 3D analyst.

Make sure that 3D analyst and Spatial Analyst extensions are on. Select >>Tools>>Extensions then check 3D Analyst and Spatial Analyst

	Extensions	? 🗙
	Select the extensions you want to use.	
	3D Analyst         ArcScan         Geostatistical Analyst         Maplex         Network Analyst         Publisher         Schematics	
	Spatial Analyst	
Grap <u>h</u> s		
Reports		
Geoco <u>d</u> ing		
★ Add XY Data		
Ht Add Route Events	Description:	
ArcCatalog <u>Macros</u> <u>Customize</u> <u>Extensions</u>	3D Analyst 9.1 Copyright ©1999-2005 ESRI Inc. All Rights Reserved Provides tools for surface modeling and 3D visualization.	
Styles	About Extensions Cl	ose

#### **Connecting Folder**

In order to connect to folders you need to "Connect to Folder". Located from the "Add Data" (plus button) dialog box or in ArcCatalog you will notice a "Connect to Folder" button

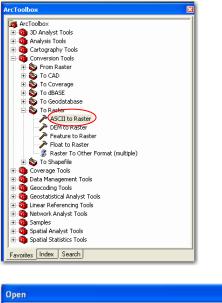
Add Data	
Look in: dem5m	- <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u>
Name	Туре
🗎 125VJ400200.asc	Text File
12svj400400	Raster Dataset 🧾
🗐 125VJ400400.asc	Text File
12svj600200	Raster Dataset
🖺 125VJ600200.asc	Text File
12svj600400	Raster Dataset
🖺 125VJ600400.asc	Text File
asciito_12sv1	Raster Dataset
asciito_12sv2	Raster Dataset
E ate.asc	Text File 💌
Name:	Add
Show of type: Datasets and Layers (*.ly	rr) Cancel

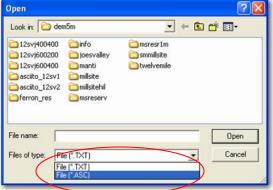
Select this button and you can map to folders that are needed. This will be a one time thing to any folder that you need. After you click the button simply select the folder you want to have access to or link to a folder. Select the drive and click "OK" and then navigate to the folder location through the "Add Data" dialog box.

Connect to Folder	$\left \times\right $
Choose the folder to which you want to connect:	
My Computer	
<ul> <li>□ Desktop</li> <li>□ RegionCapture0009 (1)</li> <li>□ My Computer</li> <li>□ DVD-RW Drive (D:)</li> <l< td=""><td></td></l<></ul>	
OK Cancel	

Open ASCII file and converting to GRID

In ArcGIS open Toolbox . If this toolbox option is not displayed complete the following >>Tools>>Extension>>Toolbars>>Standard. You can also right click or double left click the black area where the toolbars dock and check Standard. With the tool box open select >>ArcToolbox >>Conversion Tools >> To Raster>>ASCII to Raster.





If you can not find the file with ASC extension make sure to change file type to File (\*.ASC)

Select the appropriate Input ASCII raster file, locate and give an output raster name, select FLOAT.

🎤 ASCII	to Raster			
8	Input ASCII raster file select filte		<b></b>	
8	Output raster c:\temp\locate and give name		<b>a</b>	
	Output data type (optional)		•	
		OK	Cancel E	wironments Show Help >>

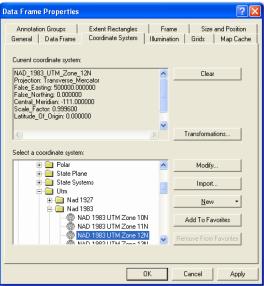
Click "OK"

### **Setting Projection**

Although we know that the file is in UTM NAD 83 meters NAVD88 meters (x, y, z), the computers does not know what the projection datum to be used. Right click on  $\Box \not = f$  Layers

select Properties. At this point you will set projection so that at a later time you can change the units. Select the Coordinate System tab and choose >>Predefined>>Projected Coordinate System>>UTM>>NAD 1983>>NAD 1983 UTM Zone

### 12N.



### **Clipping Area of Interest**

Select the area of i	nterest y	ou wou	ld like to	o work v	vith. Se	elect the	Zoom	In option	on on
	•	36 83	🖑 🥥	⇐⇒	N N	<b>0</b> A	<b>≟</b> ∮	1	

the Tools Toolbar

On the Grid file that you just created right click on that file name in the Table of Contents and select >>Data>>Export Data

×	Copy Remove Open Attribute Table	
	joins and Relates	Ħ
	Zoom To Layer Zoom To Raster Resolution Visible Scale Range	
	Data 🕨	Set Data Source
(	Save As La <u>v</u> er File	Export Data
<b>1</b>	Properties	

Click Data Frame (Current) in Extent and Spatial Reference, locate and name the file. \*\*<u>Note</u>: To select a folder to save in, click the folder icon. Only select the folder to save in. Name the file in the "Name" field. \*\* <u>Hint</u>: Raster files do not like spaces, folder, file or path name, do not like numeric first character, and do not like file name to be greater than 13 characters.

Export Raster Data - ASCIITo_12SV2	
Extent       Spatial Reference            • Data Frame (Current)          • Data Frame (Current)            • Raster Dataset (Original)           • Raster Dataset (Original)             Output Raster           Output Raster             Use Renderer       Square:          Cell Size (cx, cy):             Force RGB       Raster Size (columns, rows):           175             Name       Property         Bands       1         Pixel Depth       32 Bit         Uncompressed Size       35.89 KB         Extent (left, top, right, bott       (483376.3105, 4327329.4z)            Spatial Reference       NAD_11983_UTM_Zp	Remember you are only placing, not creating file. That is, click on folder you want data to be stored then click "Add"
Location: H:\Work Name: asciito_12sv21 Format: GRID Save Cancel	

Click "Save" to export.

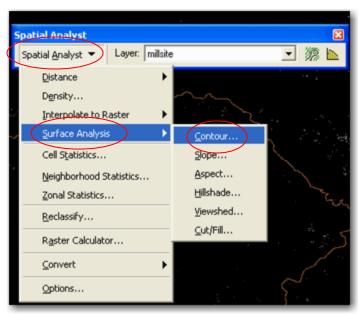
\*\*<u>Note</u>: New data has projection and datum and knows what units it is in.

Since you clipped the data to an area of interest the file is manageable. The file is no longer a 12 mile by 12 mile area.

### **Creating Contours**

Right click tan area and select Spatial Analyst or select >>Tools>>Customize >>Toolbars>>Spatial Analyst.

To create contours select Spatial Analyst>>Surface Analyst>>Contours. . .

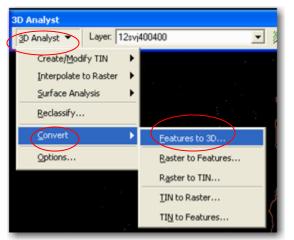


With the Contour window open locate the file where the contours will be derived, name, and location of the file to be created and set contour interval. <u>Note</u>: I strongly suggest that a one meter interval be set at a minimum. Also if there is a lot of relief the contour interval can be much higher. Do not forget the more contours the more data intensive.

Contour		? 🔀		
Input surface:	asciito_1	• 🖻		
Contour definition				
Input height range:	Z min: 2213.19995	Zmax: 3285.8		
Contour interval:	100			
Base contour:	0			
Z factor:	1			
Output information based on input c	ontour definition			
Minimum contour:	2300		ſ	0 61 1
Maximum contour:	3200			Save file location
Total number of contour values:	10			and click "OK"
Output features:	c:\temp\ctour43.shp			
	0K	Cancel		

## Create 3D polyline.

With the 3D analyst toolbar (Right click or double click the empty area where the toolbars dock and select 3DAnalyst or select >>Tools>>Customize >>Toolbars>>3D Analyst) click the <u>3</u>D Analyst dropdown>>highlight "Convert" >>click "Features to 3D".



Select file to be converted, select >>Input feature attribute>> "CONTOUR", and name and locate file.

Convert Features to 3D
Turns features into 3D by interpolating heights off a surface, using an attribute as a source of heights, or taking a specified constant.
Input features: ctour41
Source of heights
Raster or TIN surface:
Input feature attribute:     CONTOUR
Numeric constant:
Output features: H:\Work\dddfeat1.shp
OK Cancel

You are now done with ArcMap.

## Open file in AutoCad.

Autodesk Land Desktop 2006

Using AutoDesk Land Desktop 2007 the 3D shapefile will be open and the file will be converted from a polyline to contours to save compute space. Create project, designate paths, and file names just like any other AutoDesk protocol. Open



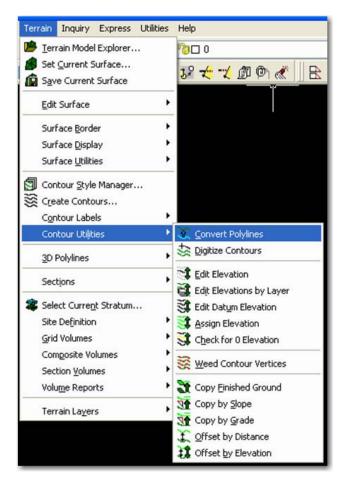
and select the Import Map File. Select

📕 Import Locat	tion		? 🗙
Look in:	🛅 Work	🚽 🖙 🗭 🔍 🗙 🕵 <u>V</u> iew	is – Too <u>l</u> s –
	Name 🔺	Size Type	Date Mo 🔨
	AISES2006	File Folder	9/17/200
History	🚞 asciito_1	File Folder	10/15/20 📃
	BSgreenriver	File Folder	4/23/200
	ChalkCreek	File Folder	5/17/200
	CIG	File Folder	10/11/20
RegionCap	ECC	File Folder	10/12/20
ے۔	HattRanch	File Folder	10/5/200
~~	i Hinkely	File Folder	8/27/200
Favorites	i ⊂ HR	File Folder	6/26/200
	Hungtingtoncleveland	File Folder	5/17/200 🗸
	<		>
Daulitar	<u>-</u>		
Desktop			
	File name:	× [	ОК
	Files of type: ESRI Shape (*.shp)		Cancel

the 3D shapefile you created in ArcGIS

Next screen select okay

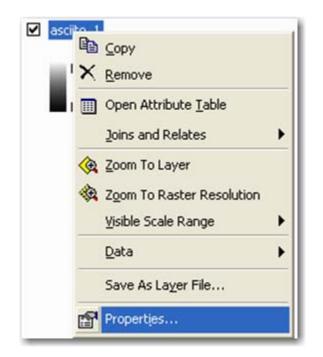
Using Terrain pull down select >>Contour Utilities>>Convert from Polylines. Select lines you want to convert and hit enter.



## OTHER TOPIC *BRING DATA IN FEET (X), FEET(Y), AND FEET (Z*) OR WHAT I CALL <u>UTM FEET X, Y, Z</u>

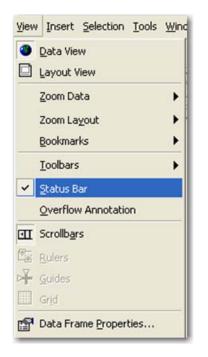
### **Option 1:**

Since your file already had project UTM meter (x,y,z). Start a new project. Add your clipped DEM with projection. You can make sure by right clicking the file and checking properties and looking under the "Source" tab.



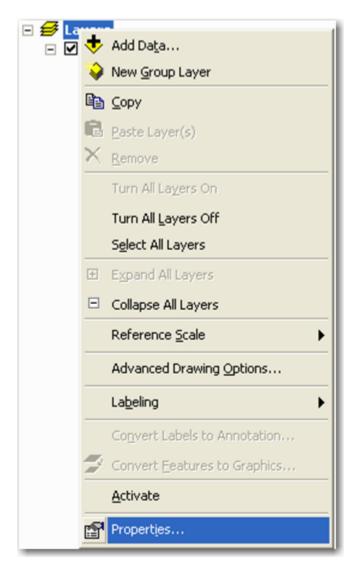
Layer Properties		? 🗙					
General Source Extent Display S	ymbology						
Property	Value						
Тор	4335542.7745351195						
Left	450164.44772344007						
Right	454830.78451260703						
Bottom	4329441.0265364228						
🖻 Spatial Reference	NAD_1983_UTM_Zone_12N						
Linear Unit	Meter (1.000000)						
Angular Unit	Degree (0.017453292519943295)						
False_Easting	500000						
False_Northing	0						
Data Source							
Data Source Data Type: File System Raster Folder: H:\Work\ Raster: asciito_1							
	Set Data Source	e					
	OK Cancel A	pply					

Since we now know that it has projection, we can change the screen projection. <u>Note</u>: Utah UTM coordinate system (x,y-meter) is around 400,000 (x), and 4,000,000 (y) and when it is in feet it is around 1.4 million and 14 million. To verify it is in meters or feet look at the lower right corner of the screen. If nothing appears while moving the mouse in the data view area select >>View (pull-down)>>Status Bar.





Now that you verified what the units are, right click the "Layers" Data Frame click "Properties"



With "Properties" open select the >>Coordinate Systems Tab<<

Data Frame Properties	? 🛛
Annotation Groups Extent Rectangles Fra General Data France Coordinate System Illumina	
Current coordinate system: N4D_1983_UTM_Zone_12N Projection: Transverse_Mercator False_Easting_500000 False_Northing: 0.00000 Central_Meridar: -111.000000	Clear
Scale, Factor: 0.999600 Latitude_Of_Origin: 0.000000	Transformations
Favorites     Favorites     Favorites     Generation     Custom     Magnetic Structure	Modify
	Add To Favorites Remove From Favorites
OK	Cancel Apply

You will notice that your <custom> option defaults to NAD\_1983\_UTM\_Zone12N since the file that is open has a projection. Click the "Modify" option and change to Foot US, since you want feet, feet, feet. This will cover the "x" and "y" and the steps below will cover the "z."

Projected Coordinate System	Properties 🛛 🛛 🔀							
General								
Name: NAD_1	983_UTM_Zone_12N							
Projection								
	erse_Mercator							
Parameter	Value 🔼							
False Easting	1640416.6666666666500000000							
False Northing	0.0000000000000000000000000000000000000							
Central Meridian	-111.0000000000000000000000000000000000							
Scale_Factor	0.99960000000000040							
Latitude_Of_Origin	0.0000000000000000000000000000000000000							
	<b>™</b>							
Linear Unit								
Name: Foot_U	•							
Meters per unit: 0.30480	00609601219							
Geographic Coordinate System								
Alias:								
Remarks:								
Angular Unit: Degree (0.017453292519943295)								
Modify								
	DK Cancel Apply							

Export data again since the file projection will be converted to existing spatial reference.

13		1
	⊆ору	
×	Remove	
	Open Attribute <u>T</u> able	
	Joins and Relates	
<b>(</b>	Zoom To Layer	P
	Zoom To Raster Resolution	
	Visible Scale Range	
	Data 🕨	Set Data Source
	Save As Layer File	Export Data
r	Properties	
		<ul> <li>Copy</li> <li>Remove</li> <li>Open Attribute Table</li> <li>Joins and Relates</li> <li>Zoom To Layer</li> <li>Zoom To Raster Resolution</li> <li>Visible Scale Range</li> <li>Data</li> <li>Save As Layer File</li> </ul>

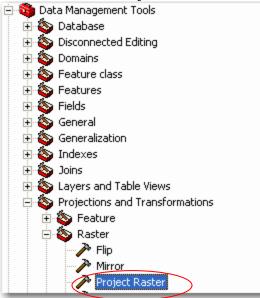
Keeping your file names straight at this point is critical. You might use "UTM-ft" in the name somewhere so that you can recall the different units. You might also want to have two

projections one in UTM meter and one in feet. Make sure you use the current Data Frame (Spatial Reference). Note the program already converted the 5 meter grids to units of feet.

Export Raster Data - millsite13
Extent       Spatial Reference         O Data Frame (Current)       Image: Data Frame (Current)         Raster Dataset (Original)       Raster Dataset (Original)         Output Raster       Cell Size (cx, cy): Image: Cell Size
NamePropertyBands1Pixel Depth16 BitUncompressed Size2.31 MBExtent (left, top, right, bott(1570859.3918, 14186534.6644, 1599327.9084,Spatial ReferenceNAD_1983_UTM_Zone_12N
Location: E:\Engineering\Mill_Site\GIS\dem5m

#### **Option 2:**

Alternatively to this method you can also use ArcToolbox. Under Data Management Tools in Toolbox select >>Projections and Transformations>>Project Raster.



Fill in the fields with green dots next to them. You will notice the program will also convert units in the cell size from 5 meters to approximately 16 feet.

🎢 Project Raster	
Input raster	Project Raster
Output raster  Output coordinate system	Projects a raster dataset into a new spatial reference using a single polynomial fit to compute the adjustment between coordinate systems. You are able to choose a preexisting spatial reference, import it from another dataset, or create a new one.
Resampling technique (optional) NEAREST Output cell size (optional)	The output has several parameters that can be set, such as the Resampling Technique and Output Cell Size. You may want to change the coordinate system so your data is all in the same projection.
	The Project Raster and Project tools are similar.
OK Cancel Environments << Hide Help	

You will notice that in the lower right area of the screen that units are in feet and are in the range of 1.4 and 14 million, a good check.

To convert the "Z" click the "Spatial Analyst" menu and select "Raster Calculator"

Spatial <u>A</u> nalyst 💙	Layer:	asciito_1	-	源 h	1
			_		2

Sp	oatial <u>A</u> nalyst 🔻	Layer: asciit			
	Distance	•			
	Density				
	Interpolate to Raster				
	Surface Analysis				
	Cell Statistics				
	Neighborhood S	Statistics			
	Zonal Statistics				
	Reclassify				
	Raster Calculati	or			
-	Convert	•			
	Options				

In the Raster Calculator expression box select the clip grid (layer) and multiply or divide by the appropriate conversion factor.

# Raster Calculator						(	? 🗙
Layers:							
asciito_1	×	7	8	9	=	$\diamond$	And
	7	4	5	6	>	>=	Or
	•	1	2	3	<	<=	Xor
	+		0	•	(	)	Not
[asciito_1] * 3.28083989501							
About Building Expressions Evaluate Cancel >>							

Now you can create contours in feet rather than meters (see previous pages for procedures) and export selection. After making your contours select the shapefile and right click >>Data>>Export Data

	ctour	46		192	<b>53((2))</b> 約66666
	_		⊆opy	B	
	Calcu	×	Remove		
-		-	Vemote	- 28	
	7		Open Attribute <u>T</u> able	2	
	7		Joins and Relates	2010 C	
	7		Joins and Relaces		
	7	۵.	Zoom To Layer	11	The second second
	7		Visible Carlo Danas		
	7	_	Visible Scale Range		
	8		Us <u>e</u> Symbol Levels		
	8	-			
	8		Selection		and all the
	8		Label Features		SFS ER (
	8		Eaberreacties		MIL G-305
	8		Convert Labels to Annotation		
	8	~	25		Post and a second
		7	Convert Features to Graphics	e	
	9		Data	Set Data	Source
	9	-		CORP. CORP.	200
	9		Save As Layer File	Export D	)ata
	9	-		Review!	Rematch Addresses
	9		Make Permanent	And the state of the	
	9	-	Properties		
	1		rioportiostri	38	

Make sure to set the file location and also make sure to select the >>the data frame<< option. Follow the previous covert to 3D procedures.

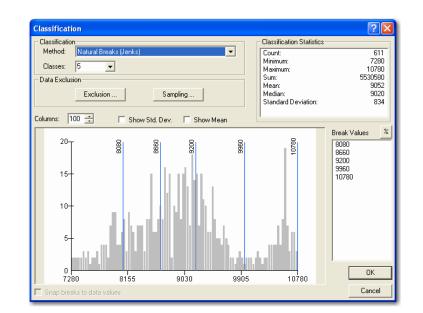
Export D	ata	? 🗙
Export:	All features	-
Use the s	ame coordinate system as:	
O this la	<u>ver's source data</u>	
💿 the da	ata frame	
	ature dataset you export the data into applies if you export to a feature dataset in a geodatabase)	
Output sh	apefile or feature class:	
H:\Work	\Export_Output.shp	<b>2</b>
	OK Can	cel

#### FILE IS TOO BIG AND MAKES MY AUTODESK CRASH.

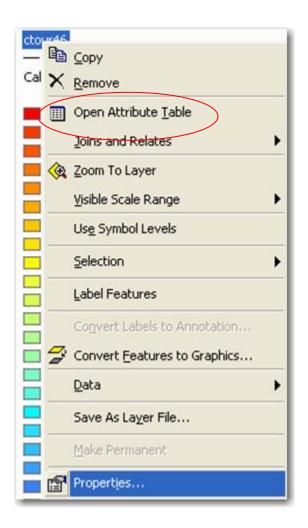
Remember if you have a lot of relief you might want to change contour interval. You can also select the contours you want. You can narrow down your selection of contours you want by attribute. In this case you might want to only look at low elevation data. You need to be familiar with your data set. To become more familiar with the data set not your min and max elevation you can also go into your symbology (>>Quantities>> Graduated colors>>and click "Classify" to get a histogram of your data.

Layer Properties		? 🛛				
General Source Selection Display Symbology Fields Definition Query Labels Joins & Relates						
Features	Draw quantities using color to show values.					
Categories	Fields Classification					
Quantities	Value: CONTOUR   Natural Breaks (Jenks)					
Graduated colors Graduated symbols	Normalization: <none>  Classes: 5  Classify</none>					
Proportional symbols						
Charts	Color Ramp:	<b>•</b>				
Multiple Attributes	Symbol Range	Label				
	7280 - 8080	7280 - 8080				
	8081 - 8660	8081 - 8660				
	8661 - 9200	8661 - 9200				
	9201 - 9960	9201 - 9960				
	9961 - 10780	9961 - 10780				
Advanced						
		OK Cancel Apply				

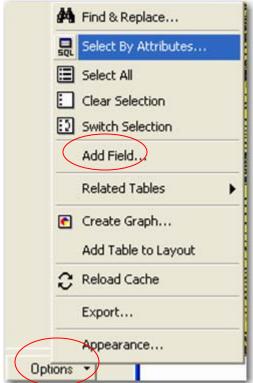
When viewing your data you can set the statistics and distribution of data.



After becoming familiar with your data you can start working on filtering data. So, right click on the contour layer you created and click "Open Attribute Table".



With the attribute table open select the "Options" button (lower right) and click "Select By Attributes"



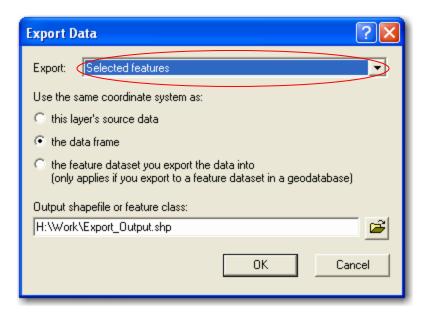
At this point write your expression and click "Apply".

Select by Attributes					
Enter a WHERE clause to select records in the table window.					
Method :	d : Create a new selection				
"FID" "ID" "CONTOUR					
= <>	Like				
> >=	And				
< <=	Or				
_ % ()	Not				
Is Get Unique Values Go To:					
SELECT * FROM ctour46 WHERE:					
"CONTOUR"	>9000				
Clear	Verify Help Load Save				
	Apply Close				

If you wanted the less than or greater symbol but liked your split value click the "Option" button and >>Switch Selection<<. This will of course switch selection.

	件	Find & Replace
	SQL -	Select By Attributes
	<b>:::</b>	Select All
		Clear Selection
(		Switch Selection
		Add Field
		Related Tables
	•	Create Graph
		Add Table to Layout
	С	Reload Cache
		Export
		Appearance
Орнонз		

At this point you export selected data right click on contour layer >>Export Data, choose the Selected Features option.



## MERGE OR MOSAIC FILES TO GET COMPLETE COVERAGE

Definitions:

Merges multiple input rasters into a single raster based upon order of input

How Merge works

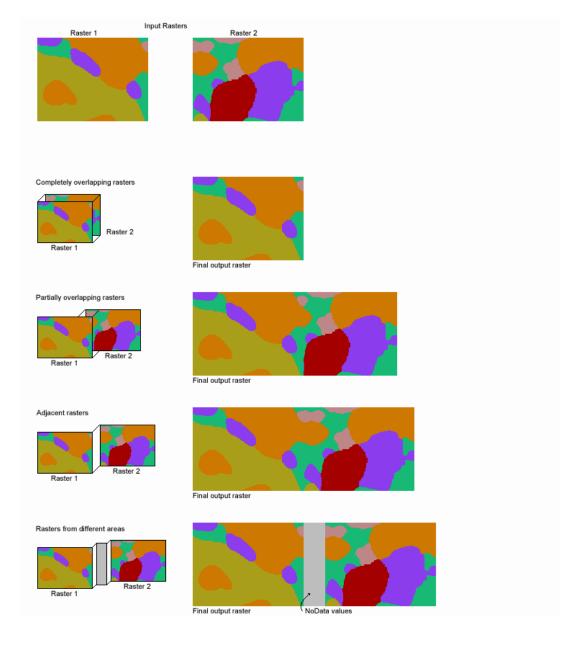
Map Algebra

Merge can be used to spatially append or mosaic rasters of different map extents, however, these have to be in the same coordinate system. The rasters can be totally overlapping, partially overlapping, adjacent, or entirely separated. If the input rasters overlap, the order of precedence is defined by the order of the rasters in the argument list.

When the input rasters overlap, they are viewed as a set of layers where NoData is transparent. The output raster receives the first value at each cell that is not NoData. For a set of overlapping rasters, a number can be entered as valid input, but this input should be the last one in the list, since it will populate the remainder of the raster.

The Merge function itself will not interpolate to fill missing data between adjacent rasters. The following Map Algebra expression may help to solve the problem by interpolating values of the missing cells. It will fill gaps of up to three rows or columns of NoData cells (the length of the gap is unrelated) with the mean cell value of the 4-x-4 square, leaving the valid existing data unchanged. If the gap is wider than three cells, the size of the focal window may be increased.  $con(isnull(gap_merge), focalmean(gap_merge, rectangle, 4, 4), gap_merge)$ 

If the gap needs to be eliminated from the mosaic made up of categorical rasters, the following approach may be useful: eucallocation(gap merge)



## Spatial relationships of rasters to be merged

#### Mosaics multiple input rasters into a single raster based upon order of input

#### **Spatial Analyst**

#### How Mosaic works

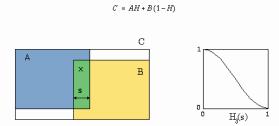
#### Map Algebra

The Mosaic function works similarly to the Merge function. When the rasters to be put together do not have any overlapping area, there is no difference in the output from both functions. The difference is the processing of the overlapping areas. In case of Merge, the sequence of input rasters determines the values assigned to cells over the common map extent, giving priority to those entered first.

For Mosaic, the sequence of entry on the command line is irrelevant if on each overlapping area no more than two rasters intersect. Mosaic uses a weighted average method to calculate values of cells in the overlapping area, taking input from two or more input rasters. The proximity analysis algorithm applied to determine cell values over the overlapping areas is called the Hermite Cubic and can be described by the following formula:

 $H_3(s) = 1 - 3s^2 + 2s^3$ 

where, s is the normalized distance (ranging values from 0 to 1) of the width of the overlapping area (it may be oriented horizontally or vertically). The cell values for the output C raster, being the mosaic of rasters A and B (see left diagram below) on the overlapping area (marked x on the diagram) are calculated according to the following formula:



The right diagram above shows graphically how the applied weighted average method works on the overlapping area. The ratio of weights of the overlapping rasters changes within the width(s) of the x area.

For the purpose of explanation, each one of the two input rasters used in the Illustration section represents a discrete type of data which, in general, is not applicable for mosaicking. The input rasters have different map extents, one is shifted versus the other for one column, with the five columns being common for both. The one called 'ingrid2' is a floating-point raster while the other one is an integer.

If the input rasters are of the integer type of data, the output raster would also be integer and the values of the output raster would be truncated.

The Mosaic function itself will not interpolate to fill missing data which may occur while putting a set of rasters into one composite entity. The following Map Algebra expression may help to solve the problem by interpolating values of the missing cells. It will fill gaps of up to three rows or columns of NoData cells (the length of the gap is unrelated) with the mean cell value of the 4-x-4 square, leaving the valid existing data unchanged. If the gap is wider than three cells, the size of the focal window may be very conservatively increased.

con (isnull(gap\_mosaic), focalmean (gap\_mosaic, rectangle, 4, 4), gap\_mosaic)

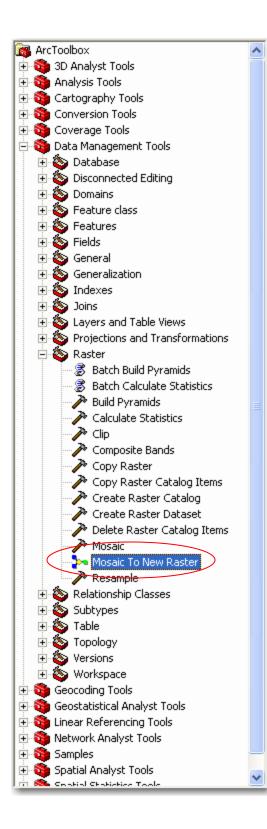
#### References

Franke, R. (1982). Smooth Interpolation of Scattered Data by Local Thin Plate Splines. Comp. & Maths with Appls. Vol. 8, No. 4, pp. 273-281 Pergamon Press Ltd.

#### **Discussion/Procedures**

\*\*Note: Cells need to be the same size. In this particular case cell size is not an issue but you want to make sure that you are working with the same type of data. Data being in different projections and folder could also be a problem. Datasets should be adjacent to each other. Also, keep in mind that even though you might be mosaicing or merging files, holes can still be present in your data. A fill (*sinks in a surface raster to remove small imperfections in the data*) option might be needed.

For the Mosaic option select on Toolbox>>Data Management Tools>>Raster>>Mosaic to New Raster.



Select the adjacent files and save a location. Fields with a green dot next to them need to be addressed. All the other fields are optional.

😁 Mosaic To New Raster						
terret Banderen	-	P Help				
• Input Rasters		Mosaic To New Raster				
		This model allows you to mosaic multiple raster datasets into a single raster dataset. The Mosaic to New Raster tool doesn't use the Output Extent setting for ArcSDE (Environment Settings -> General Settings). The reason being, the tool tend to create very large raster datasets, and the Output Extent setting might accidentally clip your data. If output extent does need to be adjusted, the Clip tool can achieve that operation.				
Output Location		If you want to mosaic into an existing raster dataset, use the Mosaic tool.				
Raster dataset name with extension	≡					
Coordinate system for the raster (optional)						
Pixel type (optional) 8_BIT_UNSIGNED						
Cellsize (optional)						
Number of bands						
Mosaic Method (optional)						
Mosaic Colormap Mode (optional) FIRST						
OK Cancel Environments << Hide Help						

Click "OK" to mosaic.